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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MICHAEL ANTHONY KLUG,
MARK EVAN HOLZBACH,
and ALEJANDRO JOSE FERDMAN

Appeal 2008-0665
Application 10/014,681
Technology Center 2800

Decided: September 19, 2008

Before MAHSHID D. SAADAT, ROBERT E. NAPPI,
and JOHN A. JEFFERY, *Administrative Patent Judges*.

SAADAT, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from a Final Rejection of claims 36-41, 57, and 64, which are all of the claims pending in this application. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

STATEMENT OF THE CASE

Appellants have invented a method and apparatus for creating and printing variable size and variable resolution holographic stereograms and holographic optical elements (Spec. 1). The invention uses a reference beam-steering system that allows a reference beam to expose a holographic recording material from different angles (Spec. 10). An understanding of the invention can be derived from a reading of independent claims 36 and 39, which are reproduced as follows:

36. An apparatus for printing holographic stereograms, comprising:
- a light source that produces a coherent beam;
 - a beam splitter that splits the coherent beam into an object beam and a reference beam;
 - a material holder holding a holographic recording material having elemental holograms;
 - an object beam unit, including a removable band-limited diffuser, for displaying a rendered image and for conditioning the object beam with the rendered image to interfere with the reference beam at a chosen elemental hologram, wherein the removable band-limited diffuser includes a deterministic phase pattern designed to diffuse light in at least one of a specific pattern and a specific direction, and wherein the removable band-limited diffuser is designed for a wavelength corresponding to a wavelength of the coherent beam;
 - a removable masking plate located in the path of the reference beam and proximate to the holographic recording material, wherein the removable band-limited diffuser and the removable masking plate form a matched set configured to allow exposure of a particular size hogel; and
 - a computer programmed to control the interference of the object beam and the reference beam and the delivery of the rendered image to the object beam unit.

39. An apparatus for printing holographic stereograms, comprising:
- a light source that produces a coherent beam;
 - a beam splitter that splits the coherent beam into an object beam and a reference beam;
 - a material holder holding a holographic recording material having elemental holograms;
 - an object beam unit for displaying a rendered image and for conditioning the object beam with the rendered image to interfere with the reference beam at a chosen elemental hologram;
 - a voxel-control lens located in the path of the object beam and proximate to the holographic recording material, the voxel control lens being capable of varying the size of at least one voxel and being capable of making the rendered image displayed by the object beam unit as seen from the viewpoint of an elemental hologram appear at a greater apparent distance relative to the holographic recording material; and
 - a computer programmed to control the interference of the object beam and the reference beam and the delivery of the rendered image to the object beam unit.

The Examiner relies on the following prior art references in rejecting the claims on appeal:

Benton	US 4,834,476	May 30, 1989
Zabka	US 5,223,955	Jun. 29, 1993
Kasazumi	US 5,317,435	May 31, 1994
Kihara	US 5,949,559	Sep. 7, 1999

Claims 36-38 and 64 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the teachings of Kihara, Kasazumi, and Benton.

Claims 39-41 and 57 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the teachings of Kihara and Zabka.

Rather than repeat the arguments here, we make reference to the Brief (filed Sep. 6, 2006) and the Answer (mailed Feb. 5, 2007) for the respective positions of Appellants and the Examiner.

ISSUES

1. Under 35 U.S.C § 103(a), with respect to the appealed claims 36-38 and 64, would the ordinarily skilled artisan have found it obvious to modify Kihara in combination with Kasazumi and Benton to render the claimed invention unpatentable?
2. Under 35 U.S.C § 103(a), with respect to the appealed claims 39-41 and 57, would the ordinarily skilled artisan have found it obvious to modify Kihara in combination with Zabka to render the claimed invention unpatentable?

PRINCIPLES OF LAW

To reach a conclusion of obviousness under § 103, the Examiner bears the burden of producing factual basis supported by teaching in a prior art reference or shown to be common knowledge of unquestionable demonstration. Our reviewing court requires this evidence in order to establish a prima facie case. *In re Piasecki*, 745 F.2d 1468, 1471-72 (Fed. Cir. 1984).

Furthermore, the test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art. *See In re Kahn*, 441 F.3d 977, 987-88 (Fed. Cir. 2006), *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991) and *In re Keller*, 642 F.2d 413, 425 (CCPA 1981).

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said

subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1734 (2007).

“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Leapfrog Enter., Inc. v. Fisher-Price, Inc.*, 485 F.3d 1157, 1161 (Fed. Cir. 2007) (quoting *KSR*, 127 S. Ct. at 1739). “One of the ways in which a patent’s subject matter can be proved obvious is by noting that there existed at the time of invention a known problem for which there was an obvious solution encompassed by the patent’s claims.” *KSR*, 127 S. Ct. at 1742.

The *KSR* Court further recognized that “[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp.” *KSR*, 127 S. Ct. at 1742. In such circumstances, “the fact that a combination was obvious to try might show that it was obvious under §103.” *Id.*

ANALYSIS

1. Rejection of claims over Kihara and Zabka

Appellants argue that Zabka, while disclosing lens 47 that affects depth of field, does not teach or suggest a voxel control lens that is both capable of varying the size of a voxel and capable of making the image appear at a greater distance (Br. 5). Appellants further argue that one of ordinary skill in the art would not have used Zabka’s lens 47 in Kihara’s system since it is similar to Kihara’s condenser lens 43 and is unnecessary (Br. 6).

The Examiner responds by relying on column 7, lines 52-53 of Zabka, which discloses that lens 47 affects the size of the image and on column 7, lines 60-61 of Zabka, which states the image will appear to have a greater depth (Ans. 7). The Examiner further asserts that Zabka's stated reasons for using lens 47, such as enhancement of image fidelity and better focus control to enhance the depth of field of the recorded hologram (Zabka, col. 6, ll. 4-12), provides sufficient suggestion to one of ordinary skill in the art to combine the prior art references (Ans. 8).

Upon a review of Zabka, we remain unconvinced by Appellants' arguments that the lens 47 of Zabka is not a voxel-control lens capable of varying the size of a voxel and affecting the distance an elemental hologram appears. Zabka clearly teaches that lens 47 is placed between lens 43 and the hologram recording medium 53 in order to enhance image fidelity, to provide easy focus control of converging beam, and to affect depth of field of the resultant hologram (Figure 1; col. 6, ll. 4-16). Appellants' claim 39 recites "a voxel-control lens" without delimiting the claimed term to any specific type of lens as long as it is capable of varying the size of a voxel and rendering the image at a greater apparent distance from the holographic recording material. In fact, any lens that affects the size, the depth, and the focus of the image will also impact the voxel, as described in Appellants disclosure (Spec. 18:4-28; 19:1-18). Therefore, to the extent that claim 39 requires a voxel-control lens, we find that the Examiner has properly characterized Zabka's lens 47 as the claimed voxel-control lens and has determined that one of ordinary skill in the art would have applied the lens 47 of Zabka to the holographic systems of Kihara to achieve improved image fidelity, focus control and depth of field.

In view of our analysis above, we find that the teachings of Kihara and Zabka, when considered as a whole, support the Examiner's § 103 ground of rejection. Thus, we sustain the 35 U.S.C. § 103(a) rejection of claims 39-41 and 57.

2. Rejection of claims over Kihara, Kasazumi, and Benton

Appellants argue that Kasazumi does not teach or suggest that diffuser 200 is removable, is band-limited, or is designed for a wavelength corresponding to that of the coherent beam (Br. 7). The Examiner responds by pointing to Kihara's teaching regarding the specific wavelength of the laser beam used to produce the holographic image (col. 4, ll. 21-27) and the fact the diffuser coupled with the mask 44 screen out unnecessary light and obtain uniform and proper exposure width (col. 6, ll. 17-19) to conclude that the diffuser does indeed meet the claimed requirements (Ans. 8-9). The Examiner further asserts that Kihara (col. 5, ll. 49-54) removes the diffuser each time an image is formed to reduce the noise (Ans. 9).

We find the Examiner's positions to be reasonable and supported by evidence of record. In particular we find that using the diffuser of Kasazumi in combination with the holographic apparatus of Kihara provides for a diffuser having a deterministic phase pattern (Kasazumi, Fig. 3a-3c; col. 5, l. 55 to col. 6, l. 32) as well as the features outlined above with respect to Kihara. Such diffuser is removable as suggested by Kihara (col. 5, ll. 49-54) and is limited to the specific wavelength and output of the laser beam source (col. 4, ll. 21-27). We also agree with the Examiner that the combination of the diffuser and the mask 44 in Kihara provides for exposure of a particular hogel size by diffusion and screening the unnecessary light which allows obtaining a uniform and proper exposure width (col. 6, ll. 14-19).

Therefore, in light of our analysis above, we sustain the 35 U.S.C. § 103(a) rejection of claims 36-38 and 64 as we find that the teachings of Kihara combined with Kasazumi and Benton suggest the subject matter of those claims.

CONCLUSION

Because Appellants have failed to point to any error in the Examiner's position, we sustain the § 103 rejection of claims 36-38 and 64 over Kihara, Kasazumi, and Benton and of claims 39-41 and 57 over Kihara and Zabka.

ORDER

The decision of the Examiner rejecting claims 36-41, 57, and 64 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. 1.136(a)(1)(iv).

AFFIRMED

KIS

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